

Anæsthesia + + + + +

# ANÆSTHESIA

Can Now be Produced from a Drug and an  
Electric Current.

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*Patient will not be Robbed of all Consciousness,*

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CLEVER APPARATUS CONSTRUCTED BY A CINCINNATI MAN.

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*It may Make it Possible for a Man to watch the  
Amputation of his own Leg.*

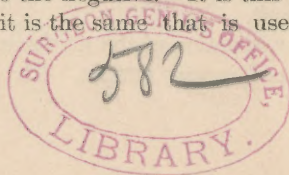
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That electricity will play an important part in the use of anæsthetics in the future has been demonstrated by the perfection, in Cincinnati, of an apparatus that has already accomplished wonderful results. During the past week there has been finally constructed and tested what is known as a cataphoresis outfit, by which anæsthesia is produced by an electric current and a surface application of some of the well known local anæsthetics. The strong point in favor of the new method is that it will produce perfect local anæsthesia, or loss of feeling, without the loss of consciousness attendant upon the use of ether and chloroform.

The little instrument that serves to bring about these results has been made by D. J. Hauss, E. E., for Dr. Paul R. Scudder, D. D. S.

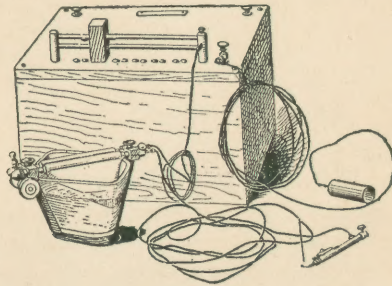
Numerous attempts have been made here in Cincinnati, as elsewhere, to produce anæsthesia by the employment of an electric current. It has been tried in many ways, not only with the direct application of the current, but also by the use of the electric current to carry an anæsthetic drug from the surface into the living tissue. This latter method has, in a degree, proven successful, and it is upon this theory that the cataphoresis machine has been perfected,

It is a well known fact that an electric current will tend to carry substances from the positive pole to the negative. It is this principle that is used in electroplating, and it is the same that is used in the apparatus in question.



## HOW IT IS DONE.

All that is necessary to accomplish the desired results is that the patient who is to undergo an operation shall be charged with electricity from the negative electrode of a battery. An application to the affected part, a tooth for example, is then made of cocaine or other drug, and the positive electrode, consisting in the case of the treatment of a tooth, of a needle, is then brought in contact with that part to which the drug is applied. The current then finishes the work by carrying the anaesthetic into the tissue or into the nerve of the tooth, rendering the nerve completely insensible. As long as the electricity is supplied the current will flow from the positive to the negative electrode and with it will be carried the drug to whatever extent may be desired. The effect will last, of course, according to the strength of the current, the time of application, the quantity of the drug used, and other conditions, it being entirely dependent upon such known quantities that with the successful regulation of the current the exact result of the application can be foreknown.



Many experiments have been made along the line described, but something has always been in the way of an entirely successful outcome. In many experiments primary batteries have been tried for the production of the desired current, but this current has been found unreliable and hence entirely unsatisfactory. Storage batteries have also been used, but a serious objection to them has been found in that changing or adding cells produces a momentary short circuit which injures the plates of a storage battery and is quite unpleasant to the patient.

## DIFFICULTY OVERCOME.

It is here that the Cincinnati machine has overcome the difficulties, and has been presented as the first instrument that can be said to work satisfactorily. The short circuiting is overcome by the employment of a sliding rheostat which has a double contact and an interposing resistance between the two contacts, thus avoiding all the danger of a short circuit.

The construction of the machine, as will be seen from the accompanying cut, is very simple. The storage batteries are inclosed in a



box, the cover of which is white marble. An ordinary hollow handle electrode is connected with the negative terminal. The positive electrode, in this case a dental instrument, is connected with a wire that is, in turn, connected with the water rheostat and thence with the positive terminal. There are the charging posts for the storage batteries within, and a sliding regulating contact, coming in contact with the brass knobs below it. The thumb-screw is used to regulate the water rheostat. The storage outfit consists of from six to eight cells, and the value of the water rheostat is that by the turn of the thumb-screw the dentist or physician is able to increase or decrease the current without the slightest pain or shock to the patient. Indeed, the operations of the entire apparatus are most perfect, and the quantity of the current is so slight that it cannot be felt by the patient during application.

#### THE APPARATUS AT WORK.

As operated by Dr. Scudder with complete success, the electrode being placed in the hand of the patient, cocaine is introduced into or about the tooth to be treated. The platinum needle electrode is then applied and insensibly to the patient the current carries the powerful drug into the extremely sensitive dentine, or if the nerve is exposed, directly into the nerve. After a brief application the complete insensitiveness is found to last from 25 to 30 minutes, which is sufficient to allow the cutting away part of the dental work to be done, or the nerve to be taken out, if desired.

While the application of the idea to surgical cases involves more care and trouble, it is believed that the preliminary experiments warrant the justification of the belief that most of such operations can be performed by the aid of the cataphoresis-producing outfit. If a leg is to be amputated it is, of course, probable that the mode of rendering the patient unconscious will always be followed. In minor operations, however, there is the novel and maybe desirable possibility of having them performed while the patient remains in a conscious state. Some strong-nerved man may sit calmly by and see his own finger or hand cut off without being in the least inconvenienced by pain. This, however remains to be accomplished by the wonderful apparatus.

Physicians and electricians have been figuring and working on the perfection of the machine for some time. As before stated, partial success has been attained, and Dr. G. N. Heise, of Cincinnati, has done some good work with primary batteries. His success with such an outfit as this, however, was due to great care and close computation, much more minute and delicate than is possible to be given every case. Mr. Hauss has been working on the plan for several months, and the ultimate success is realized to be one that is destined to revolutionize the general use of anæsthetics.—*Cincinnati Enquirer*, Nov. 29, 1896.

